Aggregating Demand & Materials Pooling

Collaborations for Shifting the Market towards Sustainable Materials

David Levine Green Harvest Technologies
Sustainable Biomaterials Collaborative

In what ways can collaboration help you to achieve a more sustainable business and in turn help to create a more sustainable society?

How can we create a sustainable economy?

"The significant problems we face cannot be solved with the same level of thinking we used to create them."

Albert Einstein

Stakeholder Engagement

Green Chemistry Research & Development

Market Transformation

Policies

Procurement

Guidelines, Purchasing Specs. & Certification

Sustainable Materials Economy

Regional Economic & Workforce Development

Market Transformation

Automobiles

Cosmetics

Electronics

Market Sectors

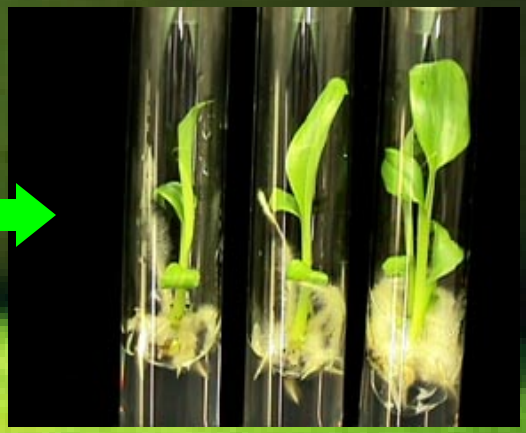
Food

Packaging

Textiles

Health Care

Building Sector



Moving Market Sectors toward a Sustainable Economy

Working Towards the Desired Future

- Values
- Purpose & Goals
- Framework
- Definitions
- Standards

Green Harvest Technologies

- Green Harvest is a Social Mission Company
- We create bio-based plastic consumer products for the outdoor, family and baby, food and beverage, and health and wellness markets.
- First product – A biobased reusable water bottle.
- We work with manufacturers to incorporate sustainable biobased plastics and materials into their products.
- We initiate and work with sustainability initiatives for biomaterials and bioplastics

Sustainable Life Cycle Thinking

Low VOC Installation

Emission free use
& maintenance

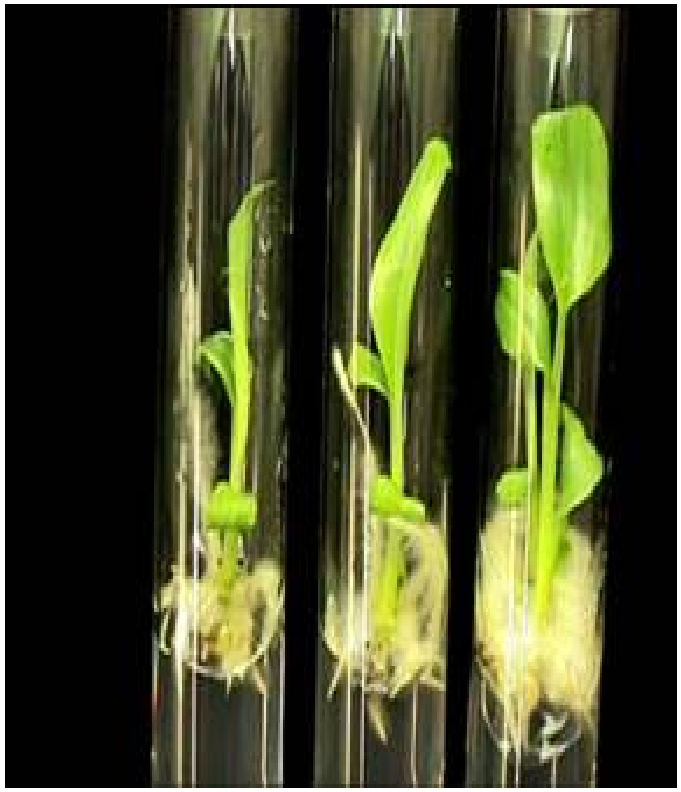
No toxic manufacture

Clean refine or
repolymerize

Recycle or grow with
sustainable agriculture

Compost or collect

Twelve Principles of Green Chemistry



Prevent waste

Design safer chemicals and products

Design less hazardous chemical syntheses

Use renewable feedstocks

Use catalysts, not stoichiometric reagents

Avoid chemical derivatives

Maximize atom economy

Use safer solvents and reaction conditions

Increase energy efficiency

Design chemicals and products to degrade after use

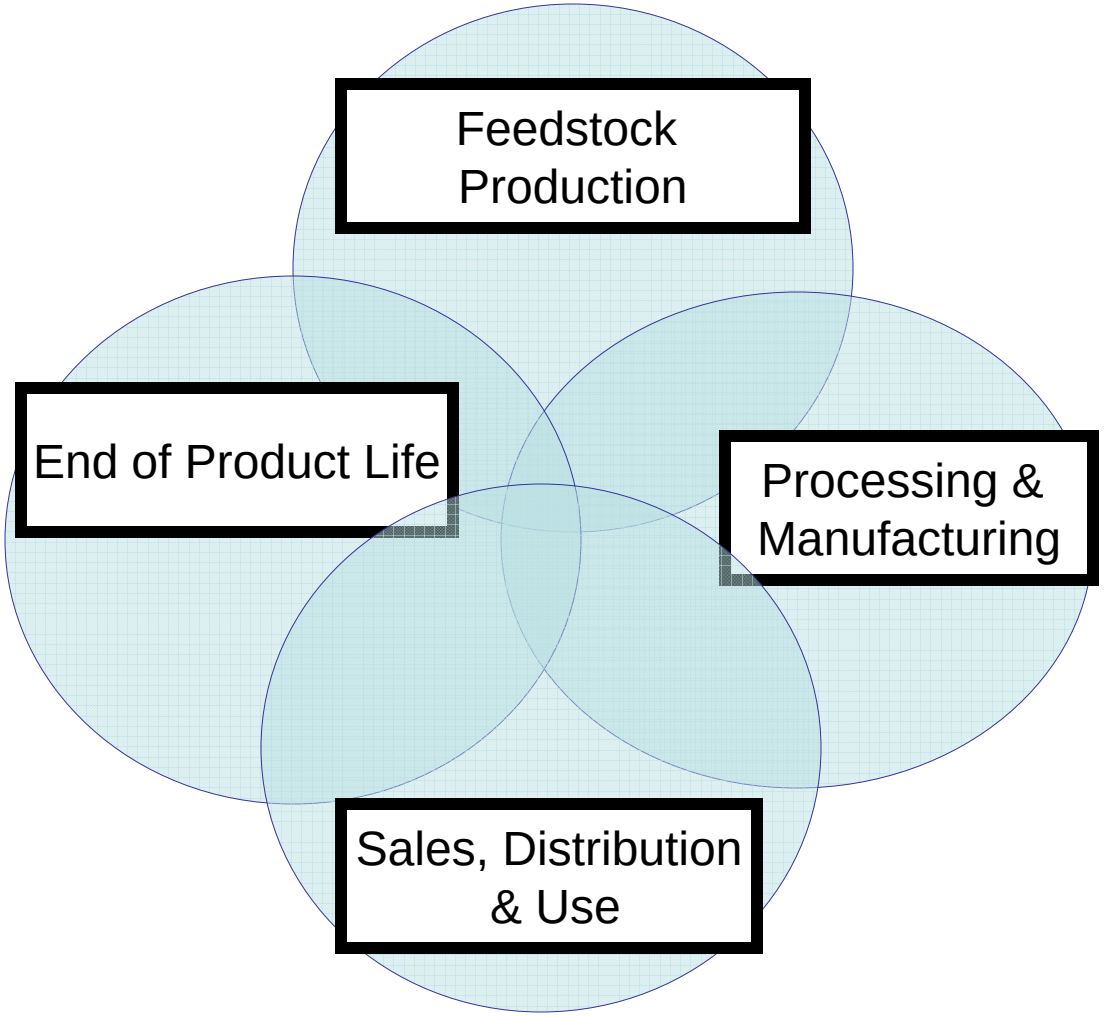
Analyze in real time to prevent pollution

Minimize the potential for accidents

Originally published by Paul Anastas and John Warner in Green Chemistry: Theory and Practice (Oxford University Press: New York, 1998).

Sustainable Biomaterials Collaborative
Sustainable Bioplastics Guidelines

Steps to Best Practice



As You Sow | Center for Health, Environment and Justice | Clean Production Action * Environmental Health Fund |Green Harvest Technologies | Health Care Without Harm | Healthy Building Network Institute for Agriculture and Trade Policy * | Institute for Local Self-Reliance* | Lowell Center for Sustainable Production * | Sustainable Research Group | Pure Strategies | RecycleWorld Consulting | Science & Environmental Health Network | Seventh Generation| National Campaign for Sustainable Agriculture

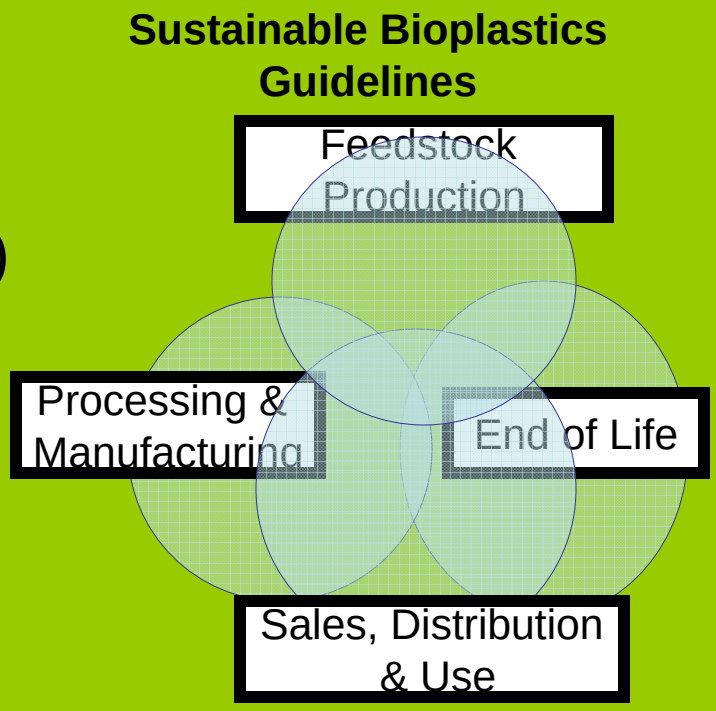
* Steering committee

Feedstock Production

- Eliminate use of key hazardous chemicals of concern
- Use of Non GMOs (or offset program)
- Sustainable farm practices
- Reduce impacts of energy use

Processing and Manufacturing

- Reduce impacts of energy use
- Avoid problematic blends and additives and encourage recycling
- Maximize process safety and minimize hazardous emissions
- Protect workers
- Create durables



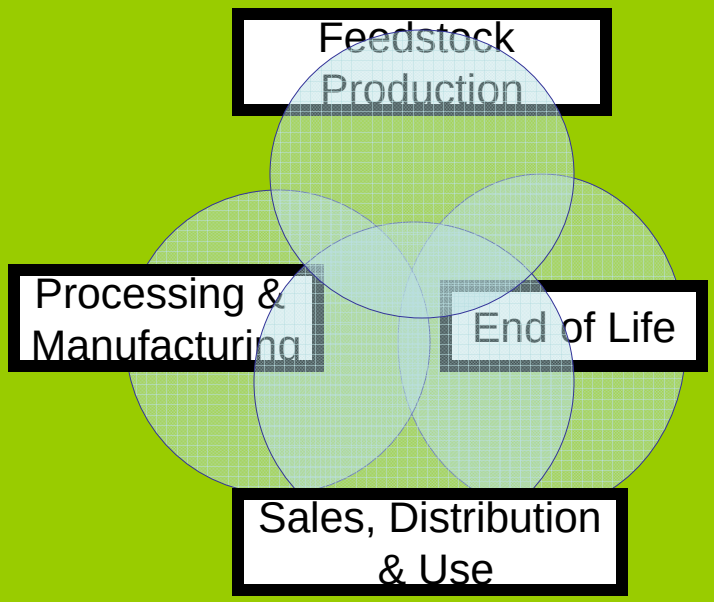
Product Distribution and Use

- Reduce quantity used
- Avoid unhealthy exposures
- Create opportunities for sustainability education
- Label material content
- Prefer local

End of Product Life

- Closed loop recyclable and/or for compostable
- Create reusables

Sustainable Bioplastics Guidelines



BUSINESS-NGO WORKING GROUP

FOR SAFER CHEMICALS AND SUSTAINABLE MATERIALS

- Businesses: Dell, HP, Consorta, Nike, Interface, Whole Foods, Kaiser Permanente, United Technologies

- NGOs: HCWH, Safe Cosmetics Campaign, Computer Take Back, Universities, Healthy Building Network

BUSINESS-NGO WORKING GROUP
FOR SAFER CHEMICALS AND SUSTAINABLE MATERIALS

Guiding Principles for Chemicals Policy

Creating Healthy Solutions for the Environment, People and the Economy

Know and disclose product chemistry

Assess and avoid hazards

Commit to continuous improvement

Support public policies and industry standards

Choosing Environmentally Preferable Food Service Ware

Reusable and Sustainable Biobased Products

HCWH Food Service Ware Materials: Environmentally Preferable Purchasing Hierarchy	
Preference Hierarchy	**Criteria**
Most Preferred	Reusable
More Preferred	Biobased products - **Beyond Baseline**
Preferred	Biobased products - **Baseline Sustainability Criteria**
Less Preferred	Biobased products (do not meet sustainability criteria)
Least Preferred	Fossil fuel & disposable

Next Step

Purchasing Specifications for Biobased Materials

B Corporation™

Setting the new corporate standard for social and environmental performance.

bcorporation.net

the change we seek™

What is a B Corporation?

B Corporations are a new type of corporation that are purpose-driven and create benefits for all stakeholders, not just shareholders.

B Corporations are unlike traditional responsible business because they:

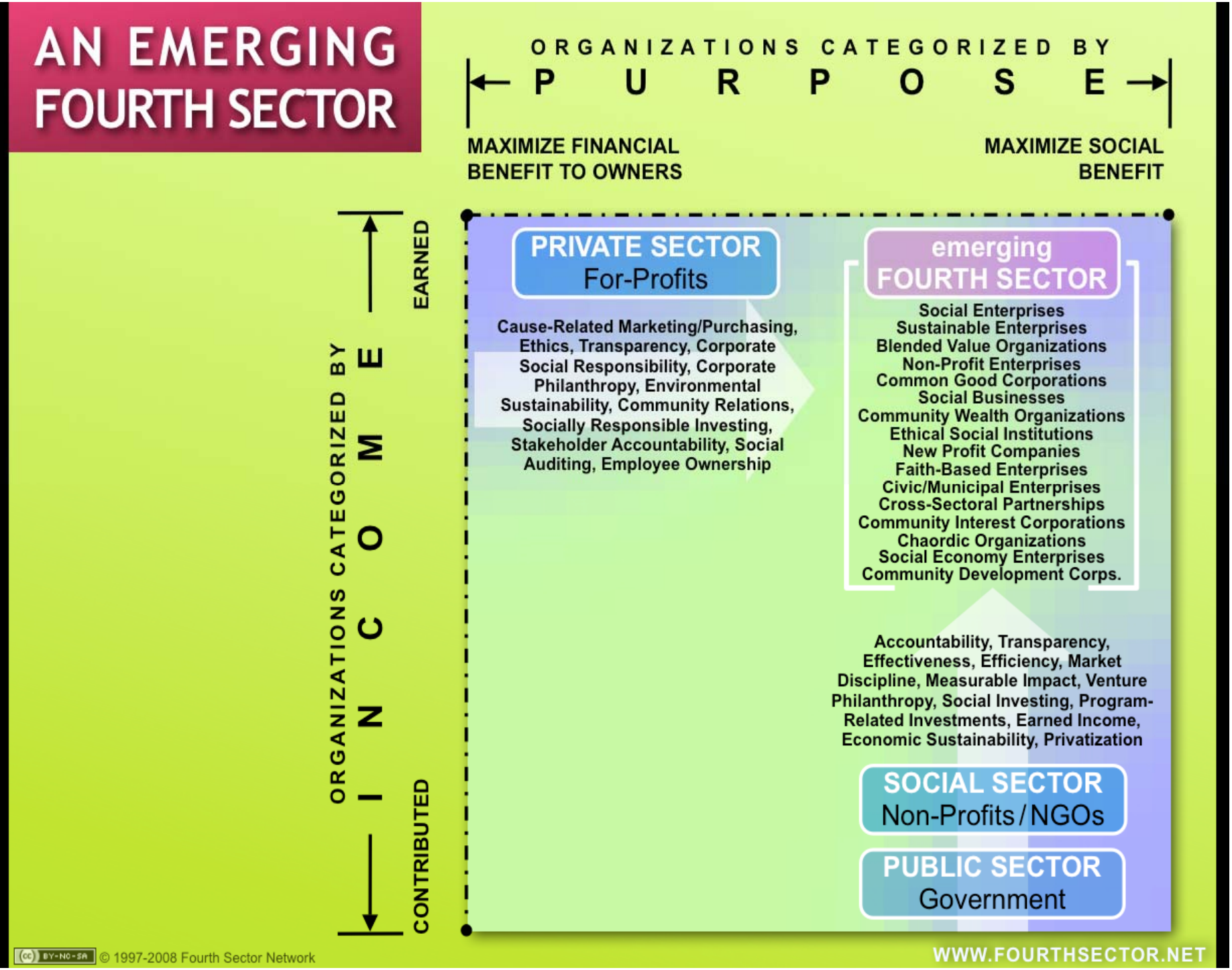
- Meet comprehensive and transparent social and environmental performance standards

- Institutionalize stakeholder interests

- Build collective voice through the power of a unifying brand.

Become a B Corporation and join over
le business and social enterprise

AN EMERGING FOURTH SECTOR



WWW.FOURTHSECTOR.NET

Traditional Collaborations

- negotiating prices with vendors
- purchasing of supplies or inputs
- joint advertising and marketing
- joint delivery services for products
- contracting for services
- warehousing products
- training and education

- Health Care
- School districts
- Independent pharmacies
- Fast-food restaurants
- Independent hardware retailers

Purchasing in Health Care

$200+ billion annually

Group Purchasing Organizations

Global Health & Safety Initiative

Mission

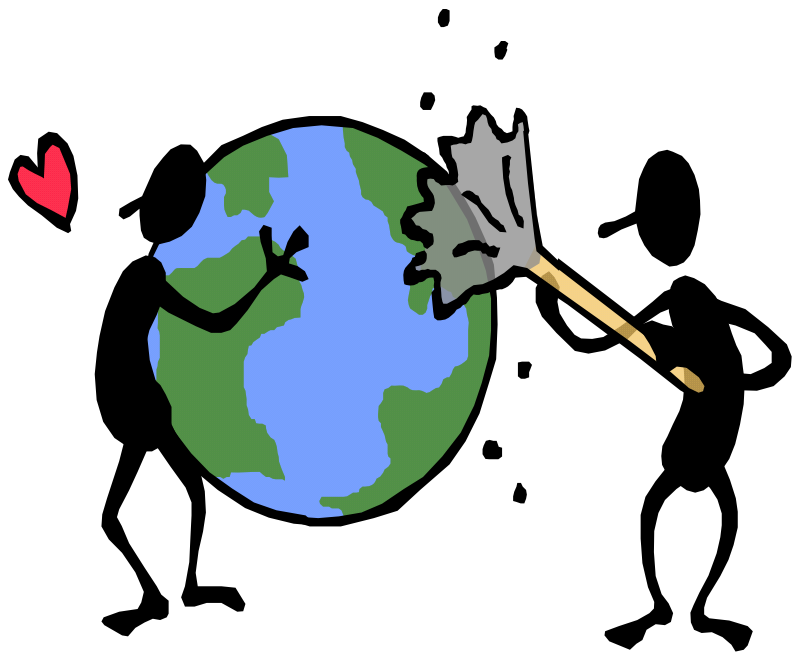
The mission of the Healthy Purchasing Workgroup is to harness the collective purchasing power of participating hospital systems and their GPOs to generate demand for inherently safer products and services for patients, workers, and the environment.

Projects

- EPP Guidance Document
- Priority Specifications
- Environmentally Preferable Purchasing (EPP) Specifications

Endorsers

- Amerinet
- Broadlane
- Catholic Healthcare West
- Health Care Without Harm
- HIGPA
- Kaiser Permanente
- MedAssets
- Novation
- Premier



Priority Specifications
(for products and services)

Including …

- Recycled paper
- PVC / DEHP-free
- Halogen-free electronics
- Greener cleaners
- Mercury-free
- Reuse of Single Use Devices
- Local & Sustainably Produced Food
- Food Service Ware products

Aggregated Demand Initiative for sustainable biomaterials

Model new type and degree of collaboration

Make the business case for market transformation

Craft a “transition agenda”

Align purchasing criteria across sectors

Share information

Identify and facilitate common research & development projects

Make group purchases

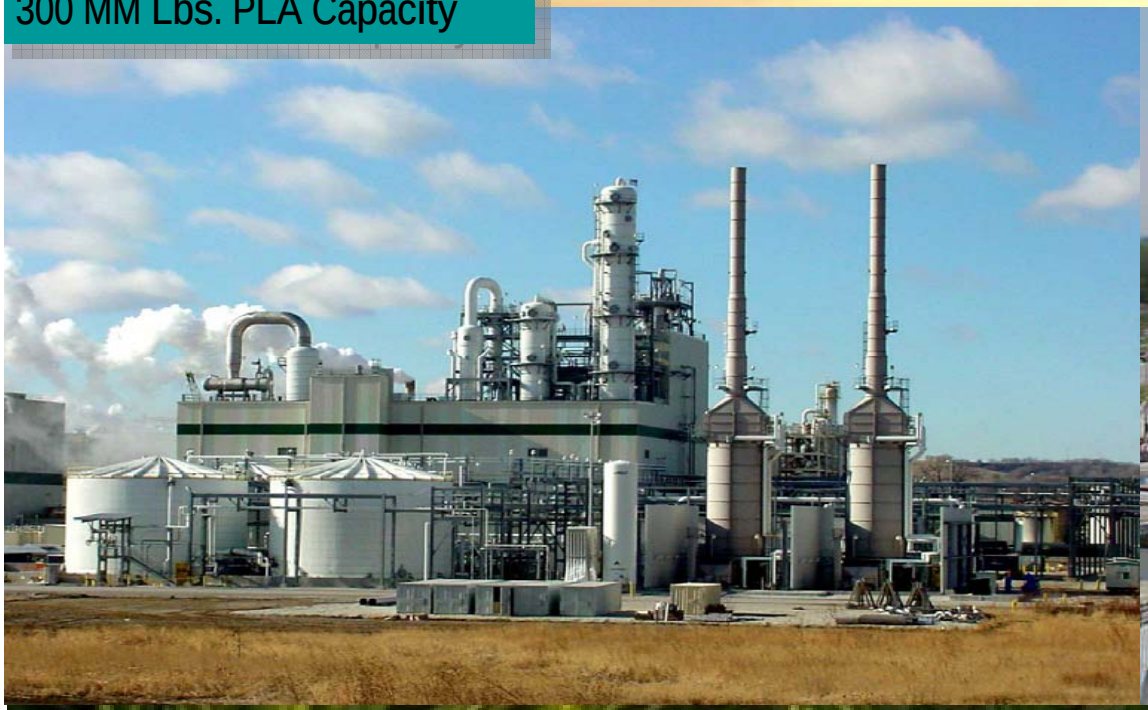
Food Trade Sustainability Leadership Initiative

NatureWorks

- Lactic Acid Based IP
  minimum of 5 million pounds.

- Corn IP program
  22 million pound minimum

PLA & Lactide Plant; Blair, NE
300 MM Lbs. PLA Capacity



Lactic Acid Plant; Blair, NE
400 MM Lbs. Lactic Acid Capacity

Institute for Agriculture and Trade Policy

Where global and local meet sustainability

greenharvest TECHNOLOGIES

Working Landscape Certificates

GAIA HERBS

Building Regional Feedstock Sources

Maine Sustainable Bioplastics Cluster

True Textiles

Tom's of Maine

Rynell Building Products

Green Harvest Technologies

Environmental Health Strategy Center

University of Maine

Maine Organic Farmers and Gardeners Association

Maine Potato Board

Opportunities for New Feedstocks

CNAP University of York, United Kingdom
British Sugar plc, United Kingdom
CPL Press, United Kingdom
Hamburg University, Germany
Max Planck Society for the Advancement of Research, Germany
Metabolic Explorer, France
National Helenic Research Foundation, Greece
Novamont SPA, Italy
Plant Research International, The Netherlands
Swedish University of Agricultural Sciences, Sweden
University of Lusanne, Switzerland
Plant Gene Expression Center, ARS-USDA, California
United States Department of Agriculture, ARS, Louisiana,

Aggregated Demand Questionnaire

Materials

What packaging material(s) do you presently use or have a future interest in using?

Present use = p☐ Future Use = f☐

Petroleum Plastics with recycled content **PET #1** p☐ f☐ **HPDE #2** p☐ f☐ **PP #5** p☐ f☐

Petroleum Film Plastics with recycled content **HPDE #2** p☐ f☐ **LDPE #4** p☐ f☐

BioPlastics **PLA** p☐ f☐ **PHA** p☐ f☐ **PHB** p☐ f☐ Other_____

BioFilm **cellulous film** p☐ f☐ Other_____

Tree-fiber substitutes **Bagasse** p☐ f☐ **Bulrush** p☐ f☐ **Hemp** p☐ f☐ **Organic cotton** p☐ f☐ **Palm fiber** p☐ f☐ Other_____

Paper with recycled content p☐ f☐ **Tree Free Paper** p☐ f☐ Other_____

Reusables p☐ f☐ **Other(s)** _____ p☐ f☐

Please explain more about what kinds of materials (from above) your company interested in pursuing? Do you have purchasing criteria (i.e. non GMO, non food product, etc)?

Applications

Which applications are you most interested in finding sustainable material solutions today?

Packaging Transport or retail level? What type of applications (i.e. grocery bags, produce clamshells)?_____

Food Service Ware What kind applications? _____

Bottles What kind of applications?_____

Other _____

Resin ID Codes

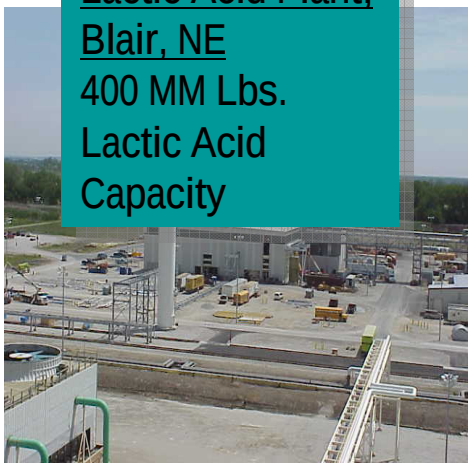
Compost or collect

Producer Responsibility

New Resins

Reduced Materials Use

Aggregated Demand Materials Pooling



Working Landscape Certificates

Aggregated Demand Initiative

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Sustainable Bioplastics Guidelines www.sustainablebiomaterials.org
Working Landscape Certificates www.workinglandscapes.org
Business NGO Working Group www.cleanproduction.org
Maine Potatoes to Plastics Initiative www.cleanandhealthyme.org
B Corporation www.bcorporation.net
For Benefit / Fourth Sector www.fourthsector.net.
Global Health & Safety Initiative www.noharm.org/us